

NON-PUBLIC?: N
ACCESSION #: 8802220254
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Plant Vogtle - Unit 1 PAGE: 1 of 4

DOCKET NUMBER: 05000424

TITLE: Malfunction Of A Reactor Coolant Pump Protection Relay Causes
Reactor Trip
EVENT DATE: 01/17/88 LER #: 88-001-00 REPORT DATE: 02/16/88

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: W. E. Burns, Nuclear Licensing Manager - Vogtle
TELEPHONE #: 404-526-7014

COMPONENT FAILURE DESCRIPTION:
CAUSE: AD SYSTEM: EA COMPONENT: RLY MANUFACTURER: W120
REPORTABLE TO NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT: On January 17, 1988, at 1902 CST, the reactor tripped from 100 percent of rated thermal power due to a low flow trip signal. The low flow trip signal occurred when a non-safety related system protection relay, Type KD-10, tripped the reactor coolant pump (RCP) #2.

The KD-10 relay is used to provide for fast clearing during stalled rotor or prolonged starting conditions and also provides redundant instantaneous fault detection. It was determined that the KD-10 relay (1NAB06-221) malfunctioned, since a trip condition did not actually exist.

The relay was replaced and a calibration test was performed. A design modification has been installed to add supervisory fault detection in addition to the existing KD-10 relay scheme. Further testing for the KD-10 relay that malfunctioned is scheduled to be completed by March 1, 1988.

(End of Abstract)

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A. REQUIREMENT FOR REPORT

This report is required per 10 CFR 50.73 (a)(2)(iv) because there was an automatic actuation of the Reactor Protection System.

B. UNIT STATUS AT TIME OF EVENT

Unit 1 was in Mode 1 (Power Operation) with the reactor operating in normal steady state conditions at 100 percent of rated thermal power. The reactor coolant system pressure and temperature were approximately 2240 psig and 588 degrees Fahrenheit, respectively.

C. DESCRIPTION OF EVENT

On January 17, 1988 at 1902 CST, reactor coolant pump #2 tripped, creating a reactor coolant low flow condition which initiated a reactor trip from the P8 permissive. The reactor trip initiated a turbine trip and a generator trip. At 1903 CST the operator closed the main steam isolation valves (MSIVs), due to the resulting cooldown and tripped both main feed pumps. This resulted in an expected Auxiliary Feedwater (AFW) Actuation of both motor driven feedwater pumps. Subsequently, as a result of the reactor trip, the steam generator water level decreased and the turbine driven auxiliary feedwater pump also automatically started. The plant was stabilized at reactor coolant system temperature and pressure of 557 degrees Fahrenheit and 2235 psig, respectively.

The reactor coolant pump (RCP) motor #2 supply breaker, 1NAB06, tripped as a result of the actuation of the 1NAB06-221 device, a non-safety related system protection relay (Type KD-10). The KD-10 relay is used to provide for fast clearing of faults during stalled rotor conditions or prolonged starting conditions. It also provides redundant instantaneous phase fault protection of the RCP motor and feeder circuit.

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D. CAUSE OF EVENT

The automatic reactor trip occurred due to a low flow actuation signal as a result of the tripping of the #2 RCP motor supply breaker, which was initiated by the 1NAB06-221 device (protective relay KD-10). The RCP motor #2 and power cables were checked to

determine if a fault had occurred. Megger readings and continuity checks were performed and found to be satisfactory. The RCP motor #2 starting and running currents and voltages were monitored and found to be satisfactory. It was concluded the RCP motor performed satisfactorily and did not cause the KD-10 relay to malfunction. The KD-10 relay circuit was checked and found to be acceptable. Calibration of the KD-10 relay was performed and the phase C-A pick-up and phase angles were found to be unstable. A new KD-10 relay was installed and calibrated satisfactorily. The trip was attributed to the malfunction of the KD-10 relay.

E. ANALYSIS OF EVENT

A partial loss of forced reactor coolant flow resulted from the tripping of the #2 RCP motor supply breaker by the 1NAB06-221 device. In the Final Safety Analysis Report (FSAR) Section 15.3.1., an analysis is provided for the partial loss of flow from two reactor coolant pumps. The necessary protection against this event is provided by the low primary coolant flow reactor trip signal. Accident analysis show the plant is tripped by the low-flow trip rapidly enough to ensure that the ability of the reactor coolant to remove heat from the fuel rods is not greatly reduced. Thus, under the circumstances of this event, the average fuel and clad temperature would not increase significantly above their respective initial values. The analysis shows that the Departure from Nucleate Boiling Ratio (DNBR) would not decrease below the limiting value of 1.3 at any time during the transient. Based upon the above, and since the reactor protection system functioned as designed, the plant safety and/or the health and safety of the public was not affected by this event.

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F. CORRECTIVE ACTIONS

The 1NAB06-221 system protection relay (KD-10 relay) was replaced. The new relay was satisfactorily calibrated on January 22, 1988.

A design modification to the KD-10 relay scheme has been installed which provides supervisory fault detection in addition to the existing KD-10 relay configuration.

Further testing will be performed on the KD-10 relay that malfunctioned to determine the cause of the malfunction. Testing is scheduled to be completed by March 1, 1988.

G. ADDITIONAL INFORMATION

1. Failed Component Identification

Westinghouse, Type KD-10, Distance Relay

2. Previous Similar Events

None

3. Energy Industry Identification System Codes

Reactor Coolant System - AB

Medium-Voltage Power System - EA

Plant Protection System - JC

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SL-4159

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X7GJ17-V310

February 15, 1988

U. S. Nuclear Regulatory Commission

ATTN: Document Control Desk

Washington, D. C. 20555

PLANT VOGTLE - UNIT 1

NRC DOCKET 50-424

OPERATING LICENSE NPF-68

LICENSEE EVENT REPORT

MALFUNCTION OF A REACTOR COOLANT PUMP

PROTECTION RELAY CAUSES REACTOR TRIP

Gentlemen:

In accordance with the requirements of 10 CFR 50.73(a)(2)(iv), Georgia Power Company is submitting a Licensee Event Report concerning a malfunction of a reactor coolant pump protection relay which caused a reactor trip. This event occurred at Plant Vogtle on January 17, 1988.

Sincerely,
/s/ L T Gucwa

L. T. Gucwa
PAH/lm

Enclosure: LER 50-424/1988-01
c: (see next page)

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Georgia Power

U. S. Nuclear Regulatory Commission
February 15, 1988
Page Two

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*** END OF DOCUMENT ***
